Marine Medium Tiltrotor Training Squadron
VMMT-204

Taking Assault Support and Special Ops Aviation to the Next Level

MV-22B Osprey

5 March 2001

Col R H Dunnivan
Commanding Officer

Independent Review Panel Areas of Interest

Will be Addressed by Visiting the Following Six Stations:

- **A:** Operations (Training, syllabus, ORM, T&R skill sets)
  DSS (Safety, Standardization, Hazard Reporting)
- **B:** Maintenance (IETMS demo, QA, supply, RCM, Optimized NALCOMIS)
- **C:** Aircraft (nacelle, cockpit/cabin)
- **D:** FREST (IMI, training devices)
- **E:** Osprey Support Center (Interface between squadron and FST Forward/Contractor)
- **F:** V-22 Aircrew Training System (Simulator facilities, pilot training center, IMI, devices, FFS FAM flight)

2

Scheme of Maneuver

OVERVIEW

Proposed Schedule:

- 0830-0955 Overview Brief VMMT-204
- 1000-1030 Operations/ATTU/DSS
- 1030-1130 Maintenance-Optimized NALCOMIS/IETM
- 1130-1230 Lunch – Working
- 1230-1325 Static
- 1330-1400 FREST
- 1400-1455 Osprey Support Center (OSC)
- 1500-1630 Simulator and Facilities
- 1630-1700 Summation in Simulator Building
- 1700 Depart

3

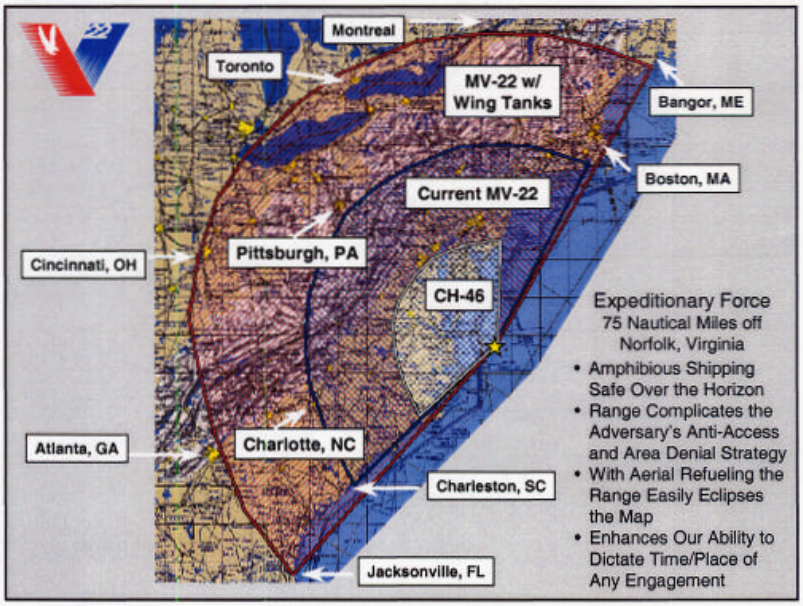
V-22 is Our Future

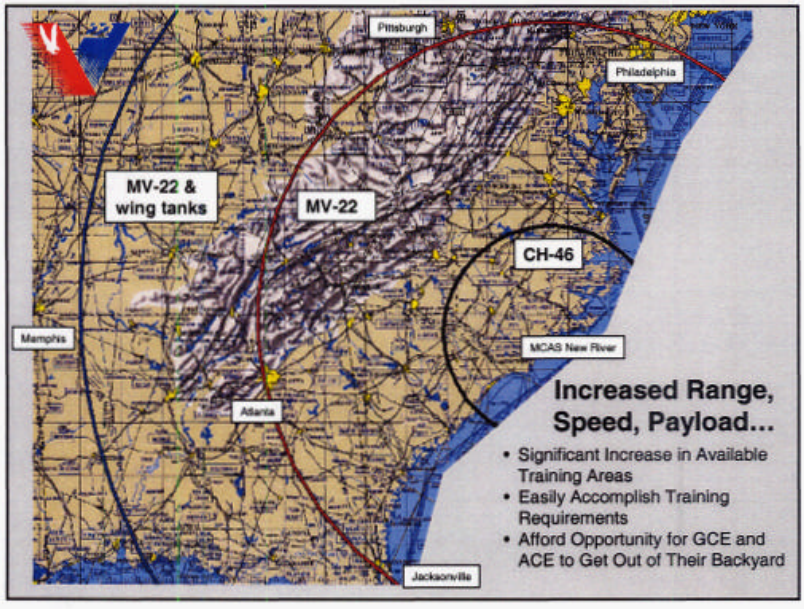
OVERVIEW

- Demographic shift will result in densely populated littorals
  - 70% of the world's population within 250 miles of the coast by 2020
- No near term peer competitor – driven to asymmetric means
- Determined foe will likely employ a strategy of anti-access and area denial, while attempting to create asymmetric engagements
- Power projection capability assumes increased prominence
- Relatively small forces of increased lethality, delivered quickly and unexpectedly will have dramatic influence on developing events

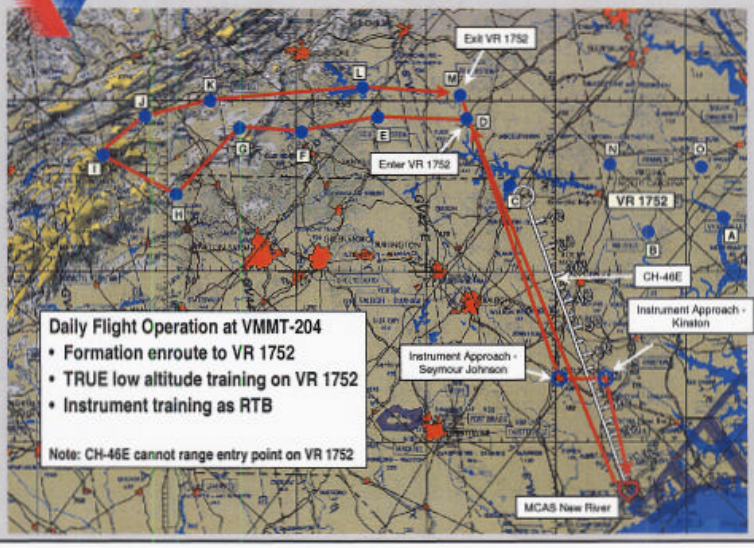
Tiltrotor Technology
Custom Fit to Meet Future Challenges

4


Montreal
Toronto
MV-22 w/
Wing Tanks
Bangor, ME
Boston, MA
Current MV-22
Cincinnati, OH
Pittsburgh, PA
CH-46
Atlanta, GA
Charlotte, NC
Charleston, SC
Jacksonville, FL
Expeditionary Force
75 Nautical Miles off
Norfolk, Virginia
• Amphibious Shipping Safe Over the Horizon
• Range Complicates the Adversary's Anti-Access and Area Denial Strategy
• With Aerial Refueling the Range Easily Eclipses the Map
• Enhances Our Ability to Dictate Time/Place of Any Engagement


Pittsburgh
Philadelphia
MV-22 &
wing tanks
MV-22
CH-46
Memphis
MCAS New River
Atlanta
Jacksonville
Increased Range,
Speed, Payload...
• Significant Increase in Available Training Areas
• Easily Accomplish Training Requirements
• Afford Opportunity for GCE and ACE to Get Out of Their Backyard

Snapshot of Daily Training at VMMT-204



OVERVIEW

Mission of VMMT-204

VMMT-204 is Tasked With Training Assault Support and Special Operations Personnel for Success in the Operational Environment of the Future

8

OVERVIEW

Mission of VMMT-204

- Train USMC and USAF Personnel
  - Aircrew and maintenance skills
- Fleet Readiness Squadron (FRS)
  - Basic Flight Training
- Advanced Tiltrotor Training Unit (ATTU)
  - Advanced Flight/Maintenance Training to provide the transitioning squadron a core capable Full Combat Capability
- Fleet Replacement Enlisted Skills Training (FREST)
  - Basic maintenance training

MV-22 Transition will be by Unit versus Individual
Squadron trains as a Team (Aircrew and Maintenance)

9

OPERATIONS

VMMT-204 Aircrew Status

- 28 Pilots
  - 9 Instructors (IP)
    - 1 DT/4 MOTT/4 VMMT-204 Trained
  - 19 Pilots Requiring Training
    - 3 T2P (100 level complete)
    - 6 PUI (100 level)
    - 10 in Simulator Syllabus/Awaiting Flight Training
  - 2 Augment Pilots (1 HMX/1 MAG-26)
- 31 Crew Chiefs
  - 7 Instructors (CCI)
    - 3 MOTT/4 VMMT-204 Trained
  - 24 Requiring Training
    - 18 in Flight Training
    - 6 Awaiting Flight Training
  - 1 Augment CC (HMX)

10

VMMT-204 Instructor Flight Training

- Pilots (28)
- Syllabus (Aircraft)
  - FAMS (10 Flts/16 Hrs)
  - CALS (5 Flts/ 8.5 Hrs)
  - NAV (2 Flts/3 Hrs)
  - Form (4 Flts/8 Hrs)
  - VLAT (7 Flts/10.5 Hrs)
  - Tactics (1 Flt/2 Hrs)
  - Instrument (2 Flts/4 Hrs)
  - T2P (2 Flts/3.5 Hrs)
  - TAC (3 Flts/4.5 Hrs)
  - IUT (3Flts/4.5 Hrs)
- SYLLABUS TOTALS:
  48 Sim Hops/94 Hrs (20.0 NVG)
  39 Flts/64.5 Hrs (13.5 NVG)

- Crew Chiefs (18)
- Syllabus (Aircraft)
  - FAMS (7 Flts/11 Hrs)
  - CALS (7 Flts/11.5 Hrs)
  - NAV (1 Flt/1.5 Hrs)
  - Form (5 Flts/9.5 Hrs)
  - VLAT (6 Flts/9.0 Hrs)
  - Tactics (1Flt/2.0 Hrs)
  - Internals (2 Flts/3.5 Hrs)
  - CCX (2 Flts/3 Hrs)
  - IUT (4 Flts/6.5 Hrs)
- SYLLABUS TOTALS:
  1 Sim Hop/2 Hrs (0 NVG)
  35 Flts/57.5 Hrs (13.5 NVG)

11

Aircrew Training Devices

- Cockpit Procedural Trainer (CPT)
  - Cockpit orientation, Instrument Trainer, No Visual or Motion
- Operational Flight Trainer (OFT)
  - Full Motion
- Full Flight Simulator (FFS)
  - Full Motion, FAA Level D Standard, Networked with FTD
- Flight Training Device (FTD)
  - FFS Equivalent, No Motion
  - Networked with FFS
- Future Plan at New River
  - 4 FFS and 3 FTD capable of Networking IAW Sim Master Plan

12

VMM Transition

OPERATIONS

How Does an HMM Make the Transition?

13

Training & Readiness Manual Volume 8: MCO P3500.34

OPERATIONS

- **Training is Broken into Phases:**
  - **Combat Capable Phase (100 Level) Basic skills taught at FRS.**
  - **Combat Ready Phase (200 Level) Core Skills**
  - **Combat Qualification Phase (300 Level) Core Skills**
    - **Completion of this Stage defines "Core Capable" Complete**
    - **VMMT-204/ATTU Mission Complete**
  - **Full-Combat Qualification Phase (400 Level) Core Plus Skills**
  - **Flight Training For FRS Instructor / VLATI / ARI (500 Level)**
  - **Flight Training for Requirements, Qualifications, Designations (600 Level)**

14

Core Capable Definition

OPERATIONS

A core capable squadron (8 Crews) is able to sortie a four-plane division of mission capable aircraft twice within a 24-hour period crewed by NSQ aircrew on any mission essential task (MET) in a medium threat environment. -T&R Volume 8 Chapter 1

VMM PILOTS		VMM AIRCREW		VMM MAINT			
DESIGNATION	PILOTS	DESIGNATION	AIRCREW	QUAL	MECHS	QUAL	MECHS
TAC	12	CCNSI	4	QAR	3	CC	20
SEC LDR	6	WTCCI	2	CDQAR	4	PC	3
DIV LDR	3	CCDCMI	2	CDI	11	AVMAT	1
FLT LDR	2	AGI	4	QASO(O)	1	PAINT	1
AMC	2			TL(O)	1	COMPR	2
VLATI	6			TM(O)	1	T&W	2
ARI	4			QASO(FE)	1	PARTCT	2
DCMI	4			TL(FE)	1	MAT3	20
NSI	6			TM(FE)	1	MAT4	12
WTI	2*			02	1	SSF	3
FCP	4						

DRAFT

15

VMM Transition

OPERATIONS

Pilots (7532)

- 28 Pilots (100% T/O)
- 4 groups of 8
- 8.5 Months to Core Capable (per group)
  - 4.5 months/group FRS
    - 5.5 weeks ground training (IMI/Sim)
    - Flt Training (100 level)
  - 4 months/group ATTU
    - 16 pilots

Throughput Dependent On:
- PAA of 12 Aircraft on Line
- Training Devices

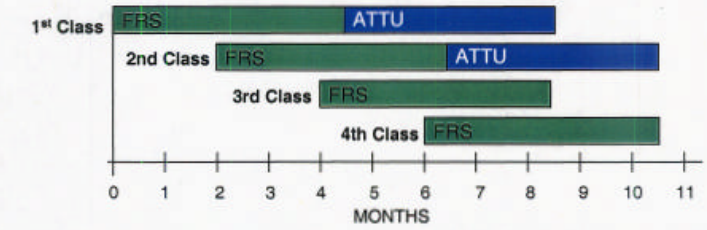
Crew Chiefs (6176)

- 20 CC (100% T/O)
- 4 groups of 8
- 11 months to Core Capable (per group)
  - 3 ½ months/group FREST
    - 11 weeks Mech Training
    - Start 2.5 Months Prior to Pilots
  - 4 months/group FRS
    - 6 Weeks CC IMI
    - Flt Training (100 level)
    - Plane Captain Syllabus
  - 4 months/group at ATTU
    - 8 Crew chiefs

16

Squadron Transition Training Progression Model

OPERATIONS



COMBAT CAPABLE TRAINING
Produces Qualified Co-Pilot
- VMMT-204 (FRS)
- Basic Skills Training
- 57% of Training in Simulator
- 4 ½ Months

COMBAT READY TRAINING
COMBAT QUALIFIED TRAINING
Produces Qualified Aircraft Commander
- ATTU
- More Advanced Skills
- 38% of Training in Simulator
- 4 Months

Note: Class Size TBD - a Function of Aircraft Procurement Schedule.

17

Safety and Standardization

DSS

- **Safety and Standardization governed by same regulations as any other USMC squadron**
- **PMA-275 still Model Manager Agent (MMA)**
- **Main challenge: Immature weapon system**
  - **Developing experience base**
  - **Limited and incomplete documentation**
  - **Limited personnel to accomplish multiple tasks**

18

Squadron Aircraft Safety and Hazard Reporting

DSS

- Safety program up & running IAW Naval Aviation Safety Program
- Hazards reported via Naval HAZREP System
  - VMMT-204 generated 7 HAZREPs in the last year

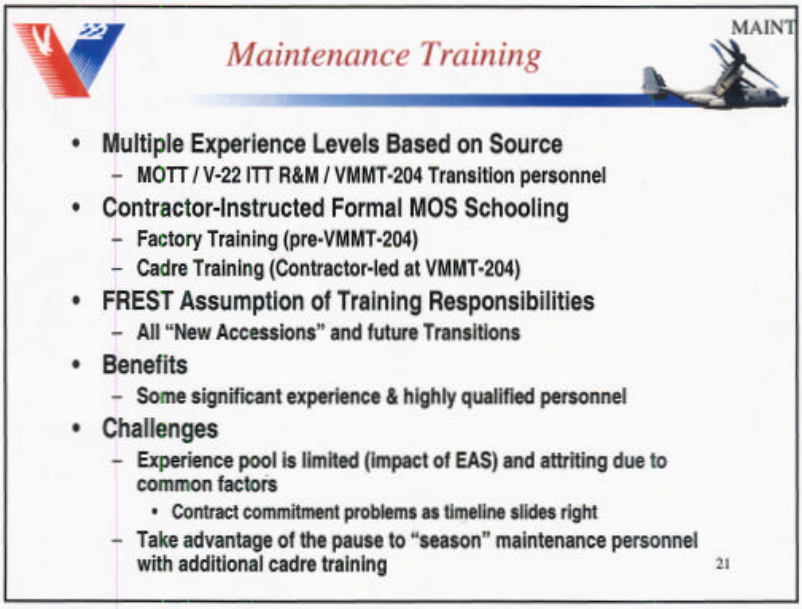
19

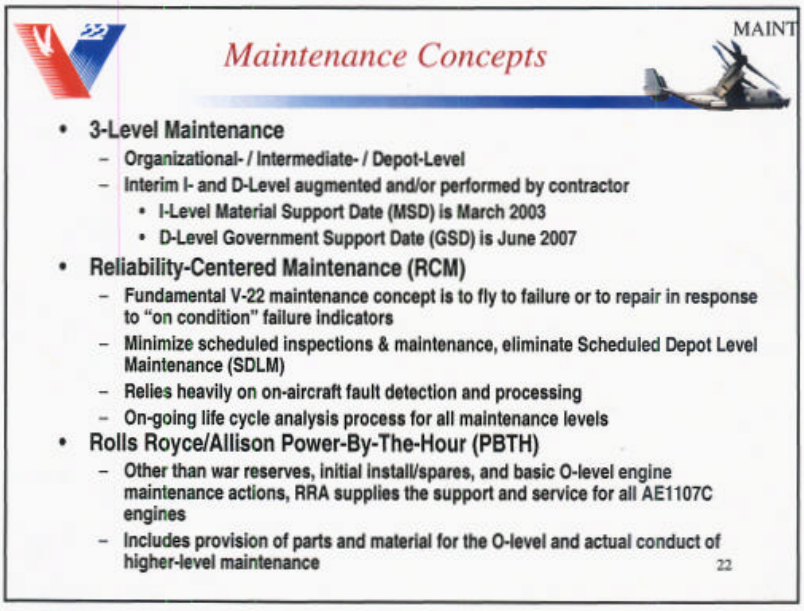
Maintenance Department

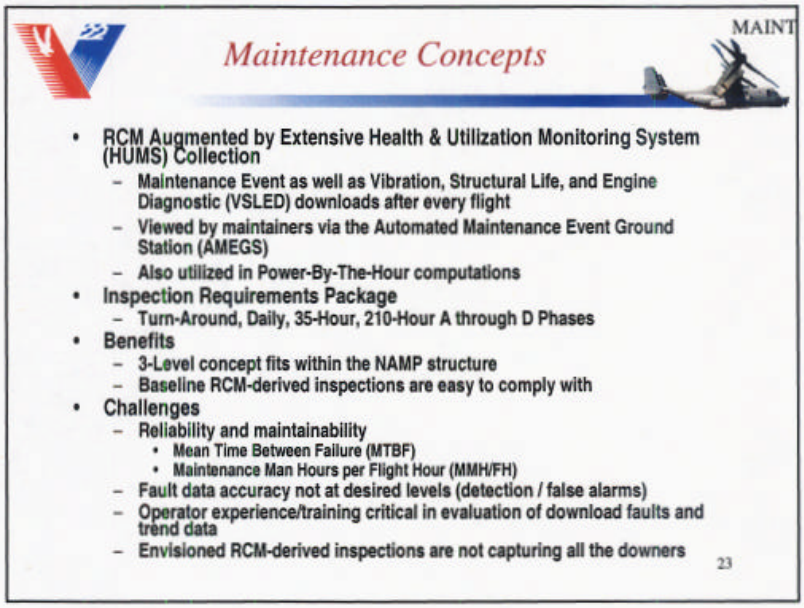
MAINT

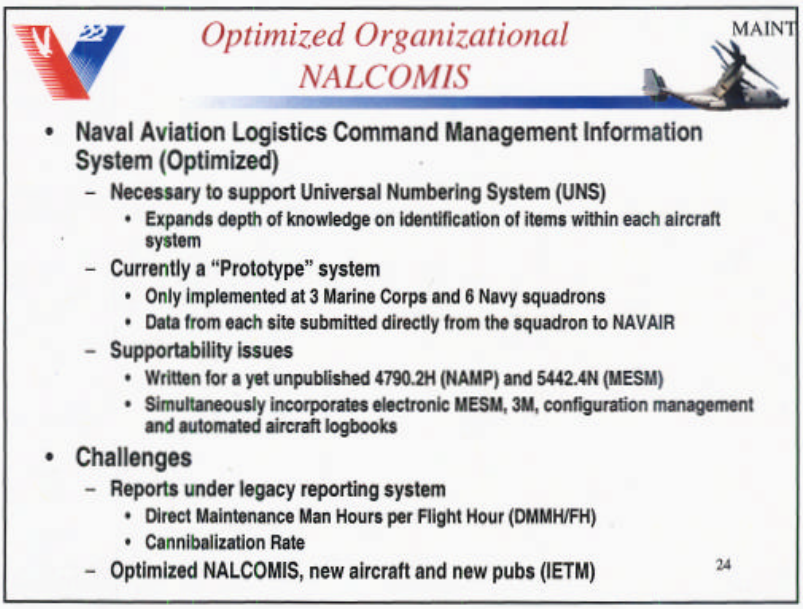
- Personnel
  - 132 USMC Maintainers
  - 35 Contract Maintenance Support (CMS) Personnel
- Organizational Structure Common Within the NAMP
  - CMS Personnel integrated in the workcenters as maintainers AND trainers
- Staff NCO "Top Heavy" By Design
  - Envisioned requirement to support Fleet Squadrons w/ key personnel
  - Sourced from both fixed- and rotary-wing communities
- Benefits
  - Department is experienced in aviation maintenance in general
- Challenges
  - V-22-specific experience still at a premium
  - Staffing shortages exist even with addition of CMS
    - Working with HQMC on Staffing Shortages

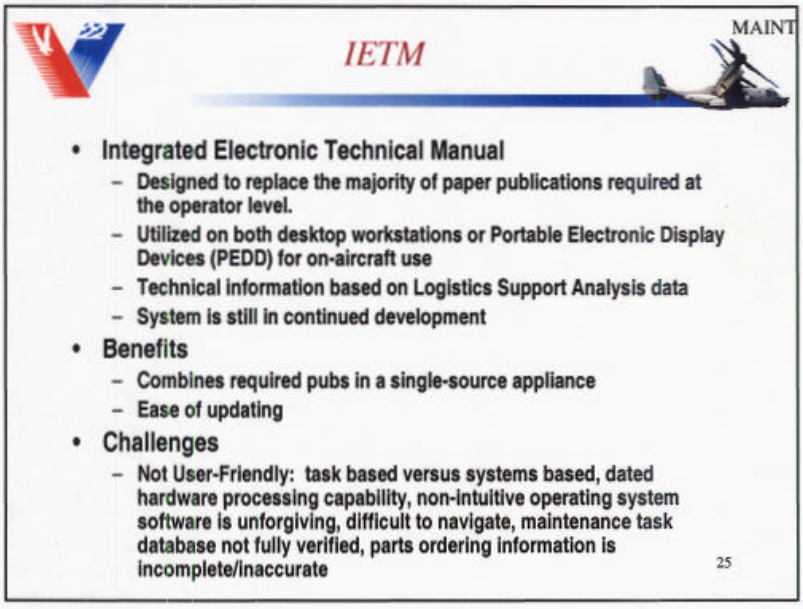
20

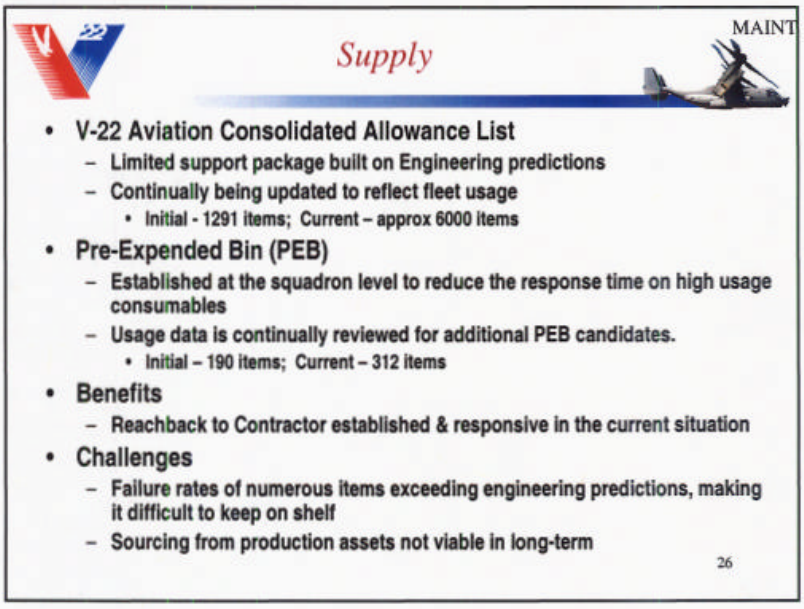

MAINT
Maintenance Training
• Multiple Experience Levels Based on Source
– MOTT / V-22 ITT R&M / VMMT-204 Transition personnel
• Contractor-Instructed Formal MOS Schooling
– Factory Training (pre-VMMT-204)
– Cadre Training (Contractor-led at VMMT-204)
• FREST Assumption of Training Responsibilities
– All "New Accessions" and future Transitions
• Benefits
– Some significant experience & highly qualified personnel
• Challenges
– Experience pool is limited (impact of EAS) and attriting due to common factors
• Contract commitment problems as timeline slides right
– Take advantage of the pause to "season" maintenance personnel with additional cadre training
21


MAINT
Maintenance Concepts
• 3-Level Maintenance
– Organizational- / Intermediate- / Depot-Level
– Interim I- and D-Level augmented and/or performed by contractor
• I-Level Material Support Date (MSD) is March 2003
• D-Level Government Support Date (GSD) is June 2007
• Reliability-Centered Maintenance (RCM)
– Fundamental V-22 maintenance concept is to fly to failure or to repair in response to "on condition" failure indicators
– Minimize scheduled inspections & maintenance, eliminate Scheduled Depot Level Maintenance (SDLM)
– Relies heavily on on-aircraft fault detection and processing
– On-going life cycle analysis process for all maintenance levels
• Rolls Royce/Allison Power-By-The-Hour (PBTH)
– Other than war reserves, initial install/spares, and basic O-level engine maintenance actions, RRA supplies the support and service for all AE1107C engines
– Includes provision of parts and material for the O-level and actual conduct of higher-level maintenance
22


MAINT
Maintenance Concepts
• RCM Augmented by Extensive Health & Utilization Monitoring System (HUMS) Collection
– Maintenance Event as well as Vibration, Structural Life, and Engine Diagnostic (VSLED) downloads after every flight
– Viewed by maintainers via the Automated Maintenance Event Ground Station (AMEGS)
– Also utilized in Power-By-The-Hour computations
• Inspection Requirements Package
– Turn-Around, Daily, 35-Hour, 210-Hour A through D Phases
• Benefits
– 3-Level concept fits within the NAMP structure
– Baseline RCM-derived inspections are easy to comply with
• Challenges
– Reliability and maintainability
• Mean Time Between Failure (MTBF)
• Maintenance Man Hours per Flight Hour (MMH/FH)
– Fault data accuracy not at desired levels (detection / false alarms)
– Operator experience/training critical in evaluation of download faults and trend data
– Envisioned RCM-derived inspections are not capturing all the downers
23


MAINT
Optimized Organizational
NALCOMIS
• Naval Aviation Logistics Command Management Information System (Optimized)
– Necessary to support Universal Numbering System (UNS)
• Expands depth of knowledge on identification of items within each aircraft system
– Currently a "Prototype" system
• Only implemented at 3 Marine Corps and 6 Navy squadrons
• Data from each site submitted directly from the squadron to NAVAIR
– Supportability issues
• Written for a yet unpublished 4790.2H (NAMP) and 5442.4N (MESM)
• Simultaneously incorporates electronic MESM, 3M, configuration management and automated aircraft logbooks
• Challenges
– Reports under legacy reporting system
• Direct Maintenance Man Hours per Flight Hour (DMMH/FH)
• Cannibalization Rate
– Optimized NALCOMIS, new aircraft and new pubs (IETM)
24


MAINT
IETM
• Integrated Electronic Technical Manual
– Designed to replace the majority of paper publications required at the operator level.
– Utilized on both desktop workstations or Portable Electronic Display Devices (PEDD) for on-aircraft use
– Technical information based on Logistics Support Analysis data
– System is still in continued development
• Benefits
– Combines required pubs in a single-source appliance
– Ease of updating
• Challenges
– Not User-Friendly: task based versus systems based, dated hardware processing capability, non-intuitive operating system software is unforgiving, difficult to navigate, maintenance task database not fully verified, parts ordering information is incomplete/inaccurate
25


MAINT
Supply
• V-22 Aviation Consolidated Allowance List
– Limited support package built on Engineering predictions
– Continually being updated to reflect fleet usage
• Initial - 1291 items; Current – approx 6000 items
• Pre-Expended Bin (PEB)
– Established at the squadron level to reduce the response time on high usage consumables
– Usage data is continually reviewed for additional PEB candidates.
• Initial – 190 items; Current – 312 items
• Benefits
– Reachback to Contractor established & responsive in the current situation
• Challenges
– Failure rates of numerous items exceeding engineering predictions, making it difficult to keep on shelf
– Sourcing from production assets not viable in long-term
26

OSC

Contractor Logistics Support

- Osprey Support Center
  - NADEP Cherry Point-owned, includes Fleet Support Team [Fwd]
- Contractor Representation
  - Field Service Representatives from: Bell/Boeing, RRA, Raytheon
- Services Provided
  - Rapid On-Site Technical Assistance
  - Logistical Assistance in researching of parts requirements and tracking the supply pipeline
  - Access to Logistic Support Analysis / Blueprint data
- Squadron CMS Not Considered Part of OSC
- Benefits
  - Access to engineering disposition and supply support
- Challenges
  - The repeated need to utilize the OSC due to deficiencies in delivered O-level support materials

27

FREST

FREST

F leet

R eplacement

E nlisted

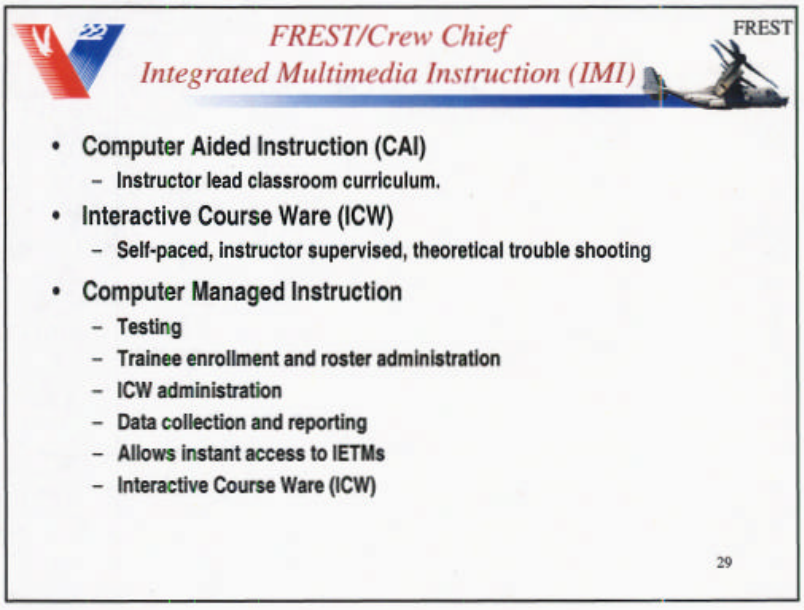
S kills

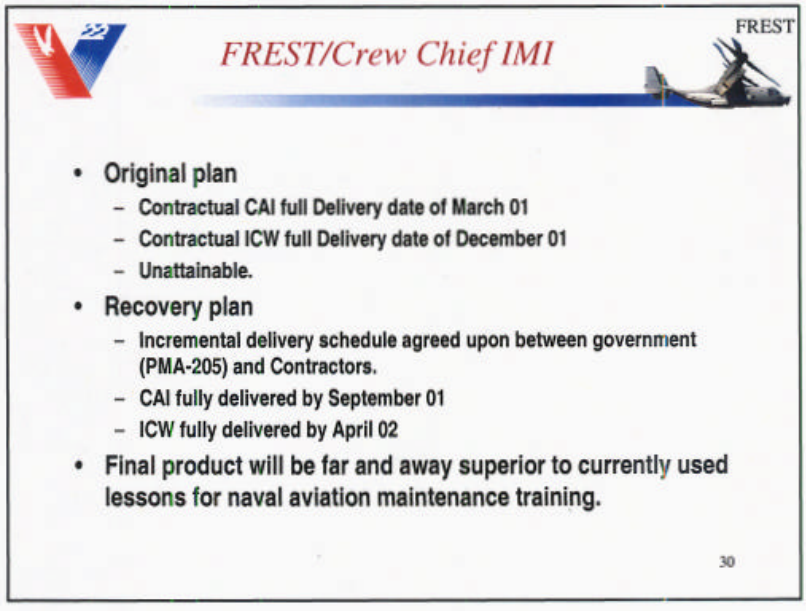
T raining

MISSION:

"Provide consolidated/co-located tiltrotor maintenance training, in partnership with the Air Force, utilizing state of the art training systems and strategies."

28


FREST/Crew Chief
Integrated Multimedia Instruction (IMI)
FREST
• Computer Aided Instruction (CAI)
– Instructor lead classroom curriculum.
• Interactive Course Ware (ICW)
– Self-paced, instructor supervised, theoretical trouble shooting
• Computer Managed Instruction
– Testing
– Trainee enrollment and roster administration
– ICW administration
– Data collection and reporting
– Allows instant access to IETMs
– Interactive Course Ware (ICW)
29


FREST/Crew Chief IMI
FREST
• Original plan
– Contractual CAI full Delivery date of March 01
– Contractual ICW full Delivery date of December 01
– Unattainable.
• Recovery plan
– Incremental delivery schedule agreed upon between government (PMA-205) and Contractors.
– CAI fully delivered by September 01
– ICW fully delivered by April 02
• Final product will be far and away superior to currently used lessons for naval aviation maintenance training.
30

FREST Training devices

FREST

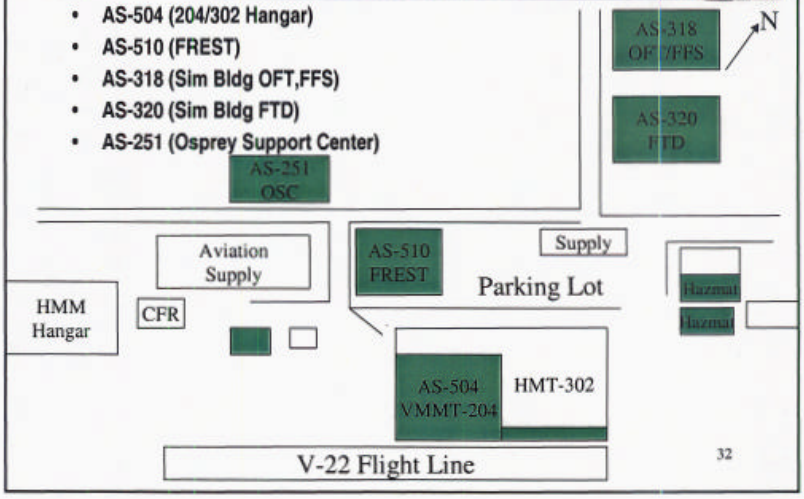
- Original plan
  - Naval Aviation Maintenance Trainer Suite (NAMTS)
  - Subcontractor defaulted
- Challenge
  - Utilize a combination of modified EMD and LRIP aircraft for high fidelity tasks to replace CMTs
  - Part Task Trainers for low fidelity tasks

31

Support Facilities - Current

FACILITIES

- AS-504 (204/302 Hangar)
- AS-510 (FREST)
- AS-318 (Sim Bldg OFT,FFS)
- AS-320 (Sim Bldg FTD)
- AS-251 (Osprey Support Center)



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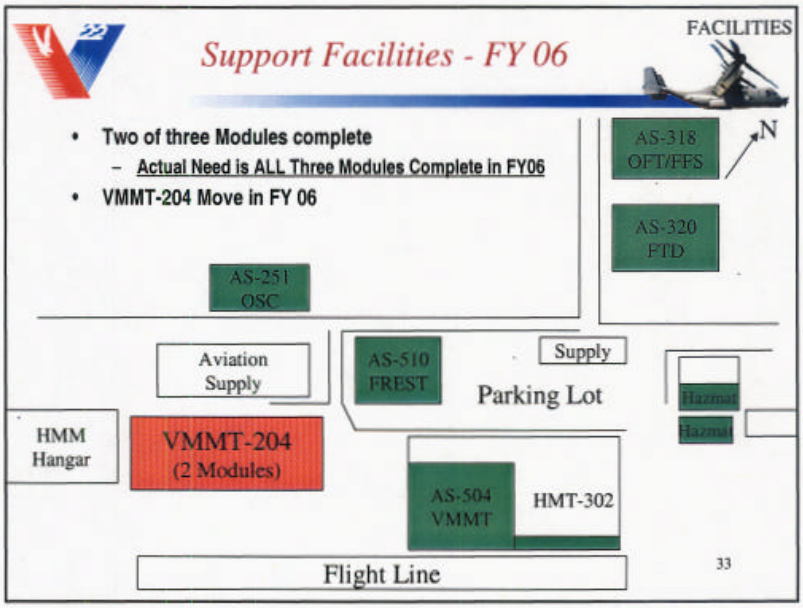
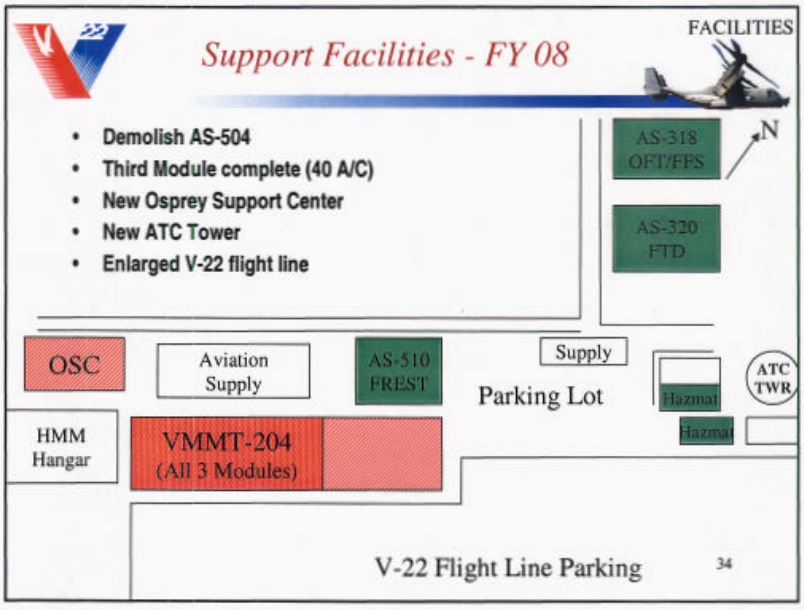

FACILITIES
Support Facilities - FY 06
• Two of three Modules complete
– Actual Need is ALL Three Modules Complete in FY06
• VMMT-204 Move in FY 06
AS-318 OFT/FFS
N
AS-320 FTD
AS-251 OSC
Aviation Supply
AS-510 FREST
Supply
Parking Lot
Hazmat
Hazmat
HMM Hangar
VMMT-204 (2 Modules)
AS-504 VMMT
HMT-302
Flight Line
33


FACILITIES
Support Facilities - FY 08
• Demolish AS-504
• Third Module complete (40 A/C)
• New Osprey Support Center
• New ATC Tower
• Enlarged V-22 flight line
AS-318 OFT/FFS
N
AS-320 FTD
OSC
Aviation Supply
AS-510 FREST
Supply
Parking Lot
ATC TWR
Hazmat
Hazmat
HMM Hangar
VMMT-204 (All 3 Modules)
V-22 Flight Line Parking
34

SUMMATION

V-22 is Our Future

Tiltrotor Technology
Custom Fit to Meet Future Challenges

35

Questions?

36